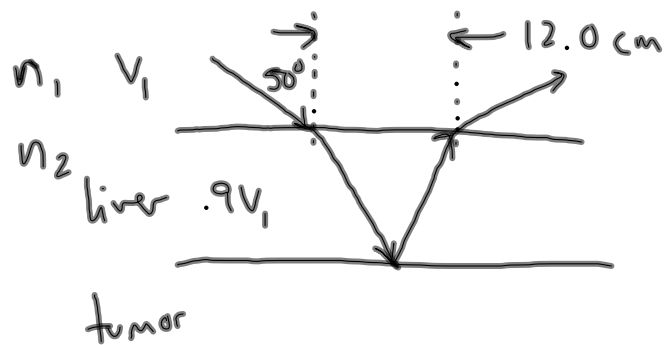


p. 1000 #16:



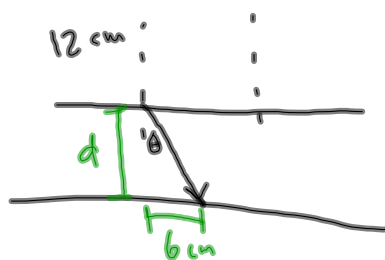
$$n_1 = \frac{c}{v_1} \quad n_2 = \frac{c}{.9v_1}$$

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$\frac{c}{v_1} \sin(50^\circ) = \frac{c}{.9v_1} \sin \theta_2$$

$$\theta_2 = \sin^{-1}(.9 \sin(50^\circ))$$

$$= 43.6^\circ$$



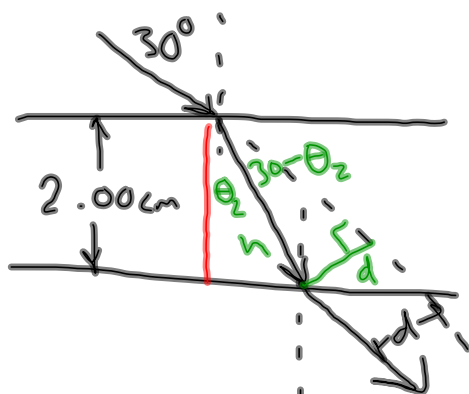
$$\tan \theta_2 = \frac{6 \text{ cm}}{d}$$

$$d = \frac{6 \text{ cm}}{\tan(43.6^\circ)}$$

$$= 6.3 \text{ cm}$$

p.1000 #19:

$$n = 1.50$$

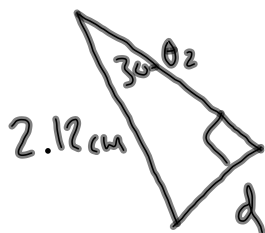


$$\begin{aligned}\theta_2 &= \frac{n_1}{n_2} \sin \theta_1 \\ &= 19.5^\circ\end{aligned}$$



$$\cos(19.5^\circ) = \frac{2 \text{ cm}}{h}$$

$$h = 2.12 \text{ cm}$$



$$\sin(30 - \theta_2) = \frac{d}{2.12 \text{ cm}}$$

$$d = 0.386 \text{ cm}$$